

PATENT  
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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Hirokazu KANEKIYO et al.	Art Unit: 1742
Serial No.: 09/986,390	
Filed: November 8, 2001	Examiner: J. Sheehan
Title: NANOCOMPOSITE MAGNET AND METHOD FOR PRODUCING SAME	

## DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

We hereby declare that we are the inventors of the present application.

We hereby declare that we invented all of the subject matter disclosed in U.S. Patent Application No. 09/986,390.

We hereby provide attached Exhibit A that clearly further illustrates and establishes the substantially improved magnetic properties,  $B_r$ ,  $H_{c1}$ , and  $(BH)_{max}$ , of our claimed invention in the present application.

We hereby declare that the entries in the Table of Exhibit A are accurate.

We hereby declare that Examples 2, 4, and 8-13 in the Table of Exhibit A correspond to Examples 2, 4, and 8-13 in Tables 7 and 8 of our originally filed Specification and are included in the scope of the present claimed invention.

We hereby declare that Examples 21-26 in the Table of Exhibit A are newly provided to further illustrate and establish the substantially improved magnetic properties,  $B_r$ ,  $H_{c1}$ , and  $(BH)_{max}$ , of our claimed invention in the present application.

We further declare that Examples 21-26 in the Table of Exhibit A are included within the scope of the originally filed specification of the present application and included in the scope of the present claimed invention.

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We hereby declare that Comparative Examples 1-10 are newly provided to clearly illustrate the substantially improved magnetic properties achieved by the present claimed invention.

We hereby declare that the substantially improved magnetic properties of our claimed invention were unexpected.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Sample No.	Composition (wt%)						Chill Roll <sup>®</sup> surface velocity m/sec.	Heat treatment temperature °C	Magnetic properties		
	Nd	Fe	B	C	Ti	M			B <sub>r</sub> (mT)	H <sub>ej</sub> (kA/m)	(BH) <sub>max</sub> (kA/m <sup>2</sup> )
example 2	9.0	bal	14.0	—	3.0	Nb1.0	15	720	887	940	115
example 4	9.0	bal	14.0	—	4.0	Nb1.5	15	660	888	925	113
comparative 1	9.0	bal	14.0	—	0.0	Nb <sup>1</sup>	15	620	780	580	71
example 8	9.0	bal	12.6	1.4	4.0	0	15	760	810	987	107
example 9	9.0	bal	11.2	2.8	4.0	0.04	15	740	770	658	80.8
comparative 2	9.0	bal	11.2	2.8	0	0.04	15	740	750	389	51
example 10	9.0	bal	9.9	1.1	3.0	Nb0.5	15	700	880	788	124
comparative 3	9.0	bal	9.9	1.1	0	Nb0.5	15	700	760	551	70
example 11	9.0	bal	11.7	1.3	3.0	0	15	780	810	764	101
comparative 4	9.0	bal	11.7	1.3	0	0	15	780	680	363	53
example 12	9.0	bal	12.8	1.4	5.0	Si1	15	780	780	955	100
comparative 5	9.0	bal	12.6	1.4	0	Si1	15	740	850	240	38
example 13	9.0	bal	13.3	0.7	3.0	Nb1	15	600	810	1080	107
comparative 6	9.0	bal	13.3	0.7	0	Nb1	15	640	620	412	49
example 21	9.05	bal	10.31	—	2	0	15	680	877	723	121
example 22	9.00	bal	11.00	—	3	0	15	700	883	892	124
example 23	8.75	bal	11.00	—	4	0	15	700	869	786	120
comparative 7	9.08	bal	10.31	—	0	0	15	740	888	488	90
example 24	9.06	bal	10.31	—	2	Cr1	15	640	845	648	102
comparative 8	9.06	bal	10.31	—	0	Cr1	15	640	850	579	89
example 25	8.00	bal	10.30	—	3	Cr3	15	680	815	680	94
comparative 9	8.00	bal	10.30	—	0	Cr3	15	660	787	534	80
example 26	6.00	bal	13.30	—	2	Zr1	15	700	750	527	86
comparative 10	6.00	bal	13.30	—	0	Zr1	15	700	720	484	74